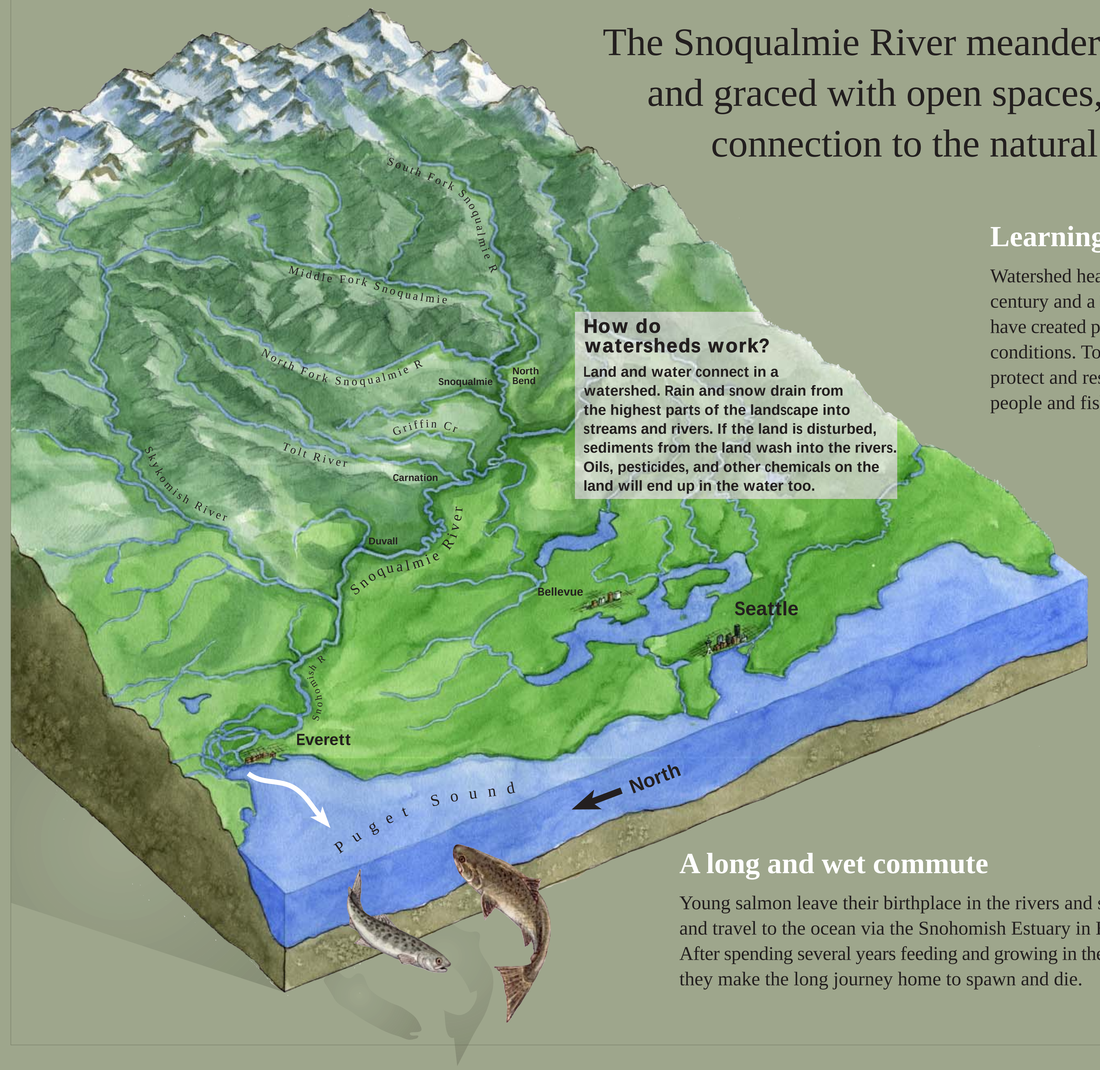
The Snoqualmie River Watershed is a very special place

The Snoqualmie River meanders through a beautiful valley dotted with farms and small towns and graced with open spaces, wetlands, and forests. The people who live here share a strong connection to the natural world, our cultural history, and our hope for the future.

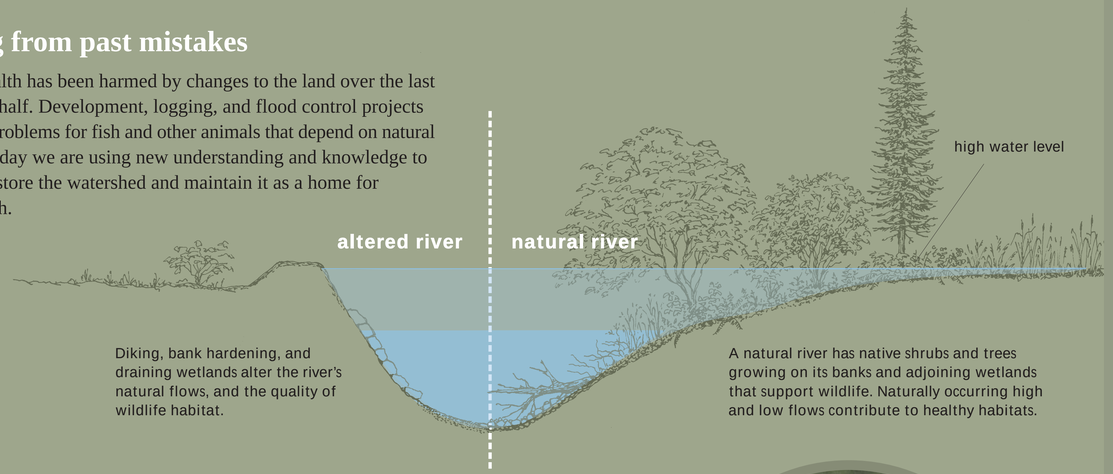


How do watersheds work?

Land and water connect in a watershed. Rain and snow drain from the highest parts of the landscape into streams and rivers. If the land is disturbed, sediments from the land wash into the rivers. Oils, pesticides, and other chemicals on the land will end up in the water too.

Learning from past mistakes

Watershed health has been harmed by changes to the land over the last century and a half. Development, logging, and flood control projects have created problems for fish and other animals that depend on natural conditions. Today we are using new understanding and knowledge to protect and restore the watershed and maintain it as a home for people and fish.



Diking, bank hardening, and draining wetlands alter the river's natural flows, and the quality of wildlife habitat.

A natural river has native shrubs and trees growing on its banks and adjoining wetlands that support wildlife. Naturally occurring high and low flows contribute to healthy habitats.

A long and wet commute

Young salmon leave their birthplace in the rivers and streams and travel to the ocean via the Snohomish Estuary in Everett. After spending several years feeding and growing in the ocean, they make the long journey home to spawn and die.

A bright future!

The Snoqualmie Watershed is important habitat for many kinds of salmon, including the threatened chinook. Its forested uplands and ample open space make it a key area for chinook recovery. On their farms, at their homes, and in their gardens, everybody affects the Snoqualmie by the choices they make. We all have the opportunity to help the Snoqualmie in our daily lives.

These signs were developed by the Snoqualmie Watershed Forum, a partnership between Duvall, Carnation, Snoqualmie, North Bend and King County. The Snoqualmie Watershed Forum supports and implements projects for salmon recovery, water quality improvement and flood hazard reduction. The Watershed Forum is committed to keeping the Snoqualmie Watershed a vibrant and healthy place for today and future generations.

Funding for the signs was provided by King County and the King Conservation District.

Snoqualmie

Carnation

Salmon in the Snoqualmie. . . forever *(with a little help from their friends)*

The Snoqualmie River system can only support vibrant runs of fish if it is clean and healthy. If future generations are to enjoy salmon as part of their natural heritage, we must work together to preserve salmon habitat today.

chinook

chum

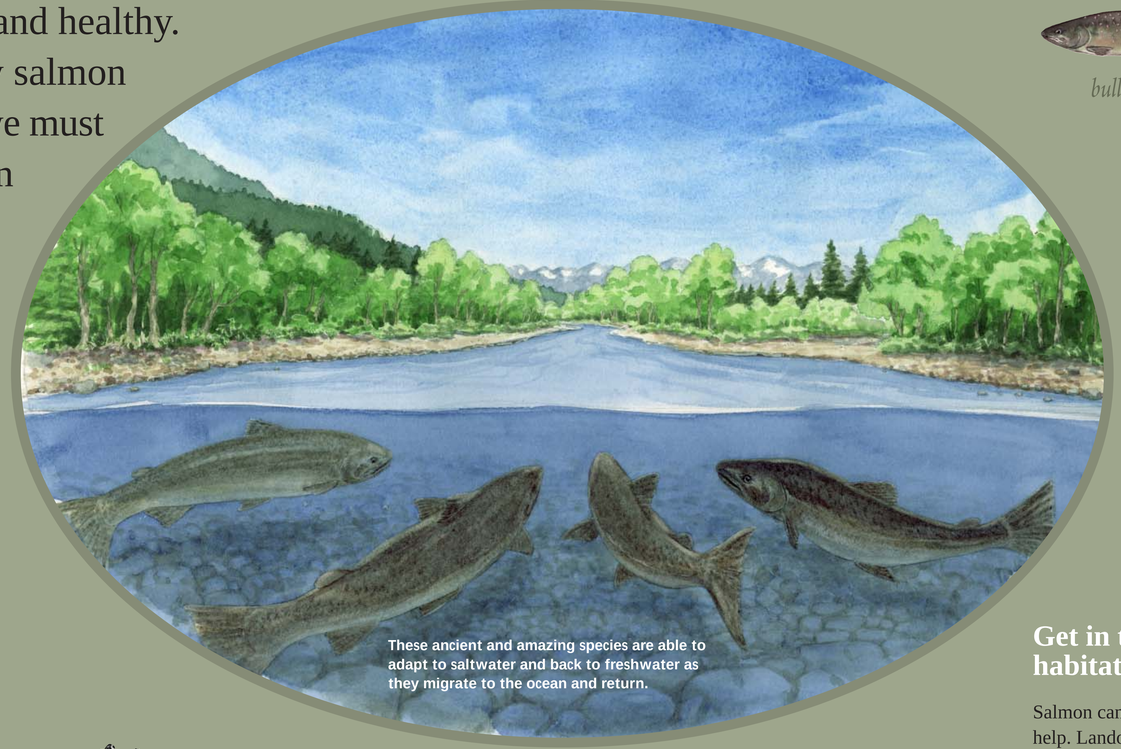
Born to be wild

The Snoqualmie River has something special...wild runs of many different types of salmon, including one of the largest wild runs of coho in the Northwest. Spawned naturally in streams and rivers rather than hatcheries, wild runs are important because they preserve genetic diversity. Over thousands of years, wild fish have learned how to best survive in their own native river system… the Snoqualmie.

coho

pink

Museum of History and Industry



These ancient and amazing species are able to adapt to saltwater and back to freshwater as they migrate to the ocean and return.

Forever in our hearts… and bellies

Improving the environment for salmon is our gift to future generations. Salmon are part of our cultural heritage, and are central to the lives of Native American tribes. Wild fish provide good food, a livelihood, recreation, and are a symbol of the Pacific Northwest.

cutthroat

bull trout

steelhead

Why do salmon need help?

Chinook are threatened with extinction. Historically, 30,000 chinook returned every year to spawn in the Snoqualmie Watershed. Today, their numbers have dropped to only about 2,000 a year. Human changes to the river and landscape over time have destroyed the food sources, spawning areas, and rearing habitat that salmon need. Other species of salmon have also declined. When salmon decline, the whole ecosystem suffers.

Get in the habitat habit!

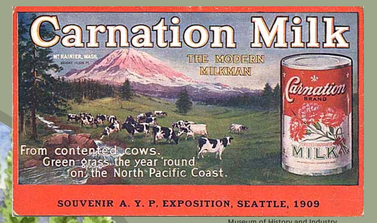
Salmon can recover, with your help. Landowners, organizations, and government agencies are all working to restore vital salmon habitat. You too can get involved in local efforts to restore habitat for salmon, wildlife, and future generations.

Choices that help salmon:

- Preserving and restoring native trees along the river and stream banks
- Protecting open spaces, forests, and wetlands
- Replacing bank rip-rap and rubble with more natural materials
- Replacing culverts that block fish access

The Snoqualmie Valley works for all of us!

The Snoqualmie Valley is a productive, working landscape that supports many types of living creatures. Some walk on two legs, some on four, others swim or fly! With a little effort, we can continue to live and prosper together in this special place.



Museum of History and Industry

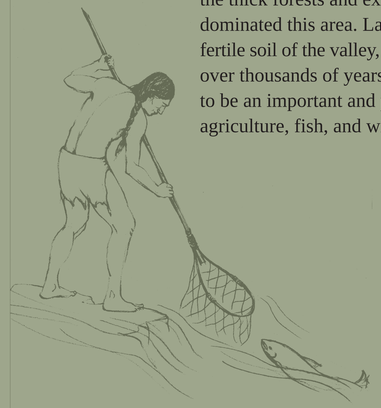
Happiness is a contented cow

The valley gained worldwide fame from the Carnation Dairy, begun in 1910 by Elbridge Amos Stuart with a bull and 86 cows. One cow, "Possum Sweetheart", produced 37,000 pounds of milk in a year, setting a world record.

Some farm practices can damage habitat. To help the environment, farms can:

- fence livestock out of waterways
- manage manure
- rotate crops
- use cover crops
- restore habitat

For information on local produce, contact Puget Sound Fresh

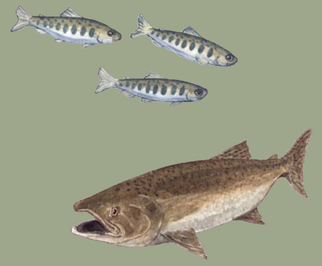


The river provides

The Snoqualmie River has shaped this valley, both physically and culturally. Before the 19th century this valley looked quite different from today. Native Americans fished and hunted in the thick forests and extensive marshes that dominated this area. Later, settlers farmed the fertile soil of the valley, formed by river deposits over thousands of years. This valley continues to be an important and productive area for agriculture, fish, and wildlife.

From boonies to burbs

The rural character of the valley has been changing as housing developments are built. The steeply rising population of the Western Cascades will continue to alter the look and feel of this landscape. The choices we make today can preserve the special qualities of the Snoqualmie.



Let's *increase* traffic!

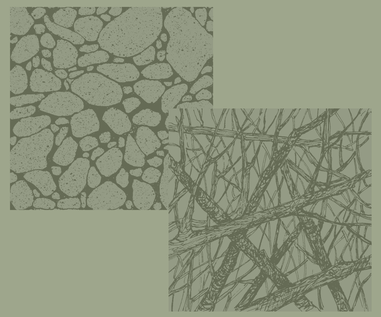
Not of cars...of fish! The thousands of salmon that make this watershed home travel past this point on their upstream and downstream migration. To have sustainable populations we need to significantly increase the number of fish living and traveling in this water "highway".

Support your local farms!

Today, more than 14,000 acres in the Valley are set aside for agriculture. The majority of the riverbank is farmland and therefore farmers are a critical link for salmon recovery. You can support viable farming and salmon recovery by supporting your local farms.

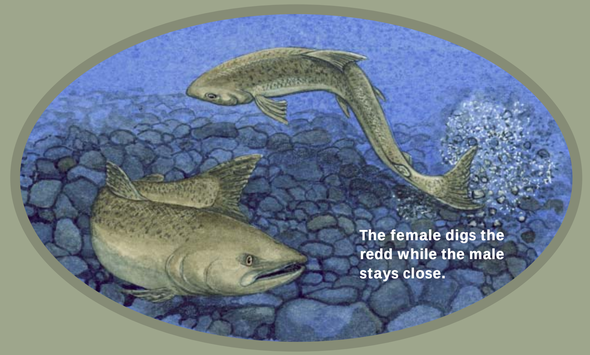
The Tolt River. . .gravelly, woody, wonderful!

Before it joins the Snoqualmie, the Tolt gathers huge volumes of gravel, logs and branches from the forests it flows through. Moving at just the right speed, the Tolt deposits its cargo where salmon use it most. Adult salmon use gravel for spawning. Woody debris creates places of refuge for juvenile salmon.



Naturally good - where it's natural

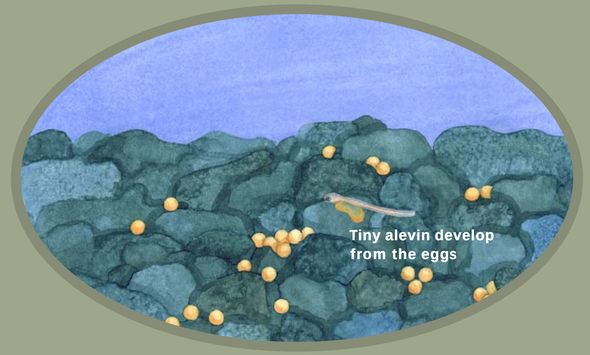
The Tolt River provides excellent habitat for wild salmon. Although at first glance it may look completely natural, this stretch of river has been altered for flood control. In the 1960s, the Tolt levees were built as smooth long banks of rock riprap. In contrast, recent projects include logs and native plantings. Habitat restoration in this area is critical because it is one of the top spawning spots in the watershed for fall chinook. Pink and chum salmon are more numerous here than in any other Snoqualmie tributary. Our challenge now is to restore the river's ability to support salmon where we can.



The redd - a gravel bed for eggs

Female salmon cannot spawn just anywhere. To dig the redd, the gravel depression that will shelter her eggs, she must find a site with gravel the right size. Too large, and she can't dig it with her tail. Too small or compacted, and her eggs could be smothered by fine sediment.

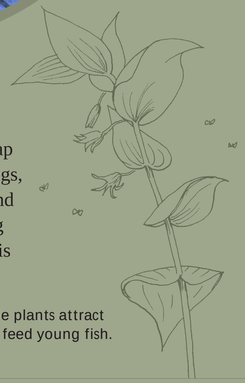
The water temperature must be right (50-57˚F), the flow not too fast or slow, and she must be able to defend her space from other competing females.



If all goes well, the eggs develop as they lie sheltered in the gravel. They are nourished with oxygen by the mixing of cool, clean water with air bubbles as it flows over rocks and boulders in the streambed.

Alert! Juveniles at risk!

The shape of the river bank is vitally important for juvenile salmon. Smooth edges stabilized with riprap leave young fish with no place to hide. They need logs, overhanging branches, rocks, and roots to shelter and cover them from predators. Lack of juvenile rearing areas is a significant factor in salmon declines in this watershed.



Streamside plants attract insects to feed young fish.

Things to see here:

•Wild fish!
From approximately the end of September to January, you may see chinook, chum, coho, and pink spawning here, and steelhead from approximately February to April. To avoid scaring the fish, keep children and pets out of the river during spawning season.

•Gravel...
The Tolt delivers about 7,000 tons of rock to the Snoqualmie yearly. These are carried as far as 4 miles downstream in the current. This area is precious because most of the Snoqualmie River does not have gravel beds for spawning.

Do salmon grow on trees?

Yes! They depend on fallen trees, and on standing forests, too. Forested headwaters are a major reason that Griffin Creek is such excellent salmon habitat.

Griffin Creek is one of the best spawning areas in the region, producing more coho than any other creek in the watershed. It also supports chinook, chum, and pink salmon, and cutthroat and steelhead trout.

You can't see them from here, but the headwaters of Griffin Creek lie mostly within private forestland. Logging can degrade habitat by increasing run-off and sediment. Well-managed, working forests can produce timber and help provide important wildlife habitat.

Trees provide safe feeding places

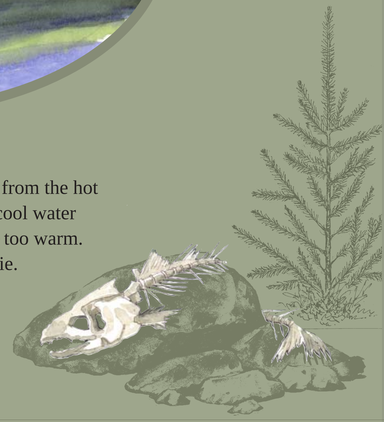
Fallen trees and branches in the stream –*large woody debris* – create pools where young salmon rear. They also create shady places where fish hide from predators. Streamside plants attract insects, a favorite fish food.

Trees keep flows clear

Rivers and streams from mature forests are great for salmon. Roots stabilize soil and slow the erosion of sediment that can smother fish eggs. Trees help the soil absorb water during heavy rains, slowing runoff that can wash away eggs or young fish.

Trees cool water for fish

Trees and shrubs next to the water shade it from the hot sun. A salmon ready to spawn is drawn to cool water (50 - 57˚F), and will avoid streams that are too warm. If the temperature gets too high, fish will die.



Carcasses decay, enriching the entire food web and supporting healthy forests.

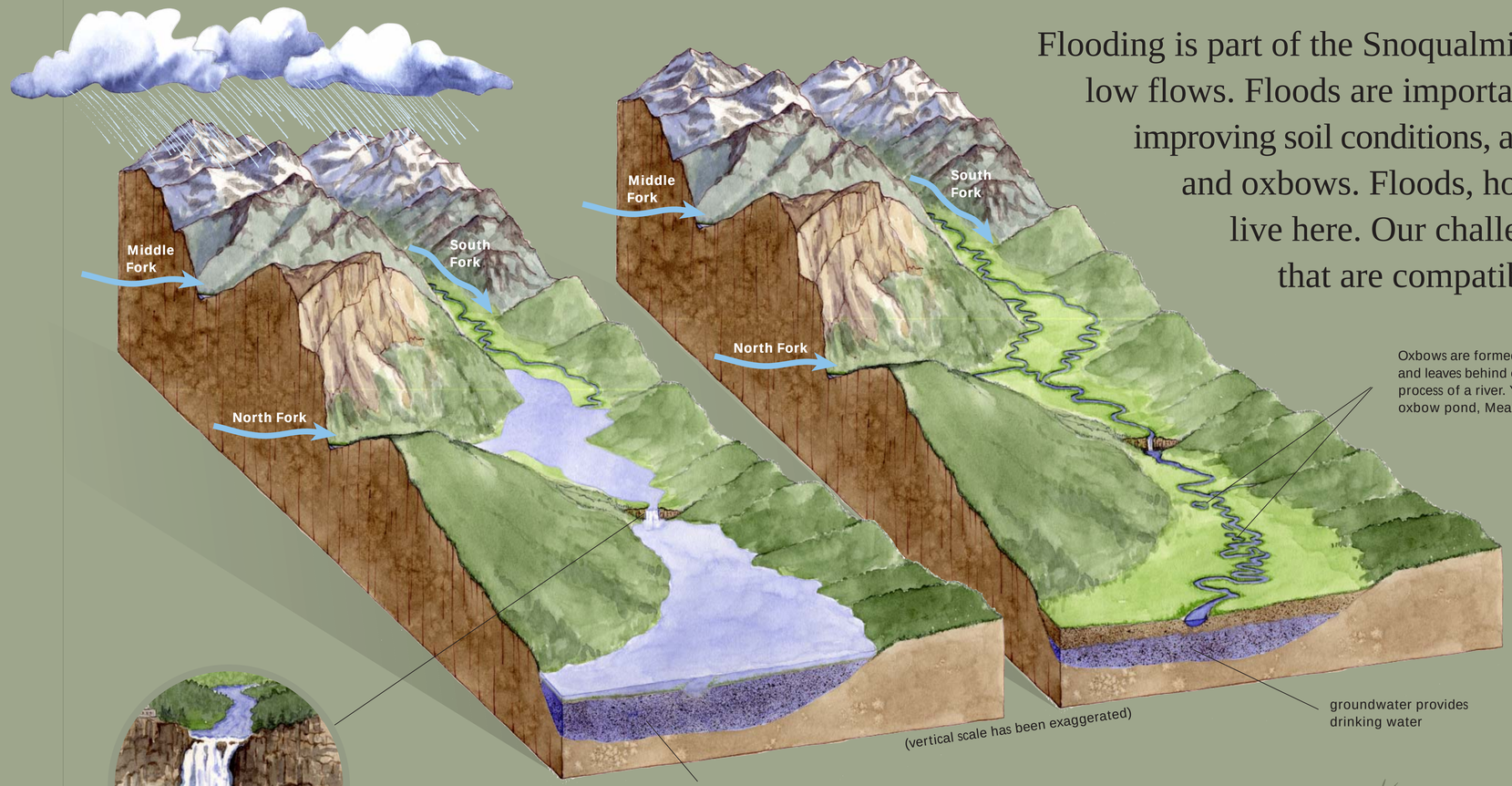
We can support working forests that use environmentally sound timber practices. Well-managed forests can help protect salmon habitat by:

- Leaving a buffer zone of uncut trees and shrubs near streams and rivers
- Leaving standing trees on steep slopes to minimize erosion and sediment flows into streams

Additional funding for signs at this site was provided by Washington Fly Fishers Association.

The highs and lows of the Snoqualmie River

Flooding is part of the Snoqualmie River's natural cycle of high and low flows. Floods are important for recharging groundwater, improving soil conditions, and creating and replenishing wetlands and oxbows. Floods, however, are a real threat to those who live here. Our challenge now is to learn to live in ways that are compatible with natural cycles of the river.



Oxbows are formed when the river changes course and leaves behind one of its bends. This is a natural process of a river. You are standing in front of an oxbow pond, Meadowbrook Slough.

Go with the flow

We have learned many lessons about watersheds, some the hard way. Some of our settlement patterns and changes to the river have proven harmful to salmon and other wildlife. The Snoqualmie River floods the valley wall-to-wall on a regular basis, creating serious risk to people and property. More recent approaches to flood hazard reduction include voluntary home buyouts or elevations for certain frequently flooded homes, and fish-friendly construction techniques. Flood-prone areas that are undeveloped provide prime habitat and are well-suited to use as open space and parks, such as the Three Rivers Natural Area in North Bend.

Snoqualmie Falls

During the November 1990 flood, enough water flowed over the falls to fill Safeco Field in 14 minutes!

Upper fish and lower fish

Ocean-going salmon cannot jump the falls, but the upper watershed is crucial for salmon downstream in providing clean water and maintaining the flow cycles that salmon need. Important resident trout populations inhabit the vast waterways above the falls, providing some of the best fishing spots in the region.

Wetlands for wildlife

Listen quietly for a moment. You can probably hear sounds of wild creatures. Wetlands are critical for many types of wildlife, from the massive elk to the tiny tree frog. Wetlands also help reduce runoff, by acting as sponges in the landscape. Wetlands soak up water and release it slowly to the river.

We can protect water quality and groundwater supplies by:

- Keeping trees and forests
- Preserving wetlands
- Minimizing pavement and hard surfaces